Thou art a shock to my æsthetic sense,
And offerest no kind of recompense
In way of use; of every function shorn,
Except to act as basis for a corn.
When thou art gone I'll still maintain my grace,
Still walk erect wherever I may be;
Still I'll belong to the athletic race,
Waltz with the fair, and kick mine enemy!
So *pace* Schopenhauers, and *pace* Mallocks
When I've acquired a hypertrophied hallux,
To monodactyle type thus simplified,
Life shall be simpler too, and so—beatified.

* * * *

When future science forgets thee in thy prime,
Methinks a great mind from a northern clime
May then discuss thy remnants, and declare
He finds a true *prophetic organ* there!

F. G. H.

NOTES.

WE lately (Sept. 6, p. 437) printed an account of the formation of the Australasian Association for the Advancement of Science. If we may judge from the newspaper reports which have now reached this country, the first general meeting of the Association seems to have been remarkably successful. The session began at the Sydney University on Tuesday evening, August 28. Lord Carrington opened the proceedings with a short speech, and then an address was delivered by Mr. H. C. Russell, the President. On the following day the sectional meetings began, and their work went on during the remainder of the week. About 110 papers were sent in by students of various branches of science, and a considerable number of them will be published in full in the first volume soon to be issued by the Association. The members had an opportunity of taking part in several pleasant excursions, and much hospitality was shown to visitors by leading citizens. At the time of the meeting there were about 850 members, and it is confidently anticipated that next year this number will be largely increased. The next meeting is to be held in Melbourne, and Baron Sir Ferdinand von Müller, the Government Botanist of Victoria, is the President-elect. In 1890 the Association will meet in New Zealand.

THE following is the list of names to be submitted, at the annual meeting (November 8) of the London Mathematical Society, for the new Council:—For President, J. J. Walker, F.R.S.; for Vice-Presidents, Sir J. Cockle, F.R.S., E. B. Elliott, and Prof. Greenhill, F.R.S. The Treasurer and Hon. Secretaries remain unaltered. The other members are: A. B. Basset, Dr. Glaisher, F.R.S., Messrs. J. Hammond, H. Hart, J. Larmor, C. Leudesdorf, and S. Roberts, F.R.S., Captain P. A. Macmahon, R.A., and Dr. Routh, F.R.S. It is proposed that the vacancies caused by the withdrawal of Lord Rayleigh, Sec.R.S., and the lamented recent death of Arthur Buchheim, shall be filled up by Messrs. Basset and Routh, as above.

H.M.S. *Jackal*, which has been engaged, under the direction of the Scientific Committee of the Scottish Fishery Board, in a cruise of physical investigation in the North Sea, recently returned to Granton. The course was along the east coast to the Orkney and Shetland Islands, and then to Bergen, Copenhagen, and Kiel. The physical work was carried on by Dr. Gibson, of the Chemistry Department of the Edinburgh University, assisted by Dr. Hunter Stewart and Mr. F. M. Gibson; and owing to the exceptionally favourable weather a large number of stations were formed at various parts of the route, at which series of temperature observations were taken, the density and alkalinity of the water determined, and samples preserved for analytical examination. Dr. Gibson had interviews with most of those conducting scientific fishery work in the countries visited, including Mr. Buch of Bergen, Dr. Paulsen, Lieut. Drechsel, Dr. Pettersen, and Mr. Feddersen of Copenhagen, and Prof. Karsten of the Kiel Commission; and we understand these conferences may result in closer co-operation between the various countries, in regard to the method and scope of scientific fishery investigations.

THE members of the International Commission of Weights and Measures have finished their session at the Pavillon de Breteuil, Paris. The making of standard metres is progressing, and next year they will be distributed to the various Governments. The guarantee of the Bureau extends to the thousandth of a millimetre and the ten-thousandth of a gramme.

THERE are now on the books of the Institution of Civil Engineers 1614 members, 2499 associate members, 458 associates, 19 honorary members, and 939 students, together 5529, being an increase at the rate of 3¾ per cent. during the past twelve months.

A SPECIMEN of the sword-fish (*Xiphias*) was captured some days ago in Long Reach, Milton Creek, Sittingbourne, by a bargeman. The fish measured 5 feet 2 inches from end of tail to tip of sword.

AN Agricultural and Industrial Exhibition was opened at Mysore by the Maharajah on the 17th inst.

AT a recent meeting of the Bombay Natural History Society, the idea of starting a Zoological Garden in that city was mooted by Mr. H. M. Phipson, the Honorary Secretary of the Society, and was warmly taken up. It was stated that the Society has been compelled to refuse large numbers of valuable specimens of animals offered to it. All that is asked from the Government is that they shall grant a site, and it is hoped that they may see their way to do so.

DR. J. C. COX lately described, at a meeting of the Linnean Society of New South Wales, two very remarkable female figures, modelled in wax, obtained in an aboriginal camp at Miriam Vale, near the head of the Calliope River, Rockhampton. These figures are said to be the only examples of plastic art ever discovered among the Australian aboriginals.

IN the Report of the Superintendent of the Adelaide Botanic Garden for the past year it is stated that the insect-powder plant (*Pyrethrum cinerariæfolium*, Trevir.), *roseum*, and *carneum*, Bibrst.), and the cheesemaker (*Withania coagulans*, Dun.), which were introduced into the Garden a few years ago, have found a congenial climate there, and have prospered wherever they were planted in the colony. Eland's Boontges (*Elephantorrhiza Burcheilii*, Benth.), which has also been recently introduced, does fairly well. In winter nothing remains of this plant but the roots, which contain tannic acid. A number of cuttings from the Daira grape, a valuable species which comes from Almeria, have thriven wonderfully in the Garden. There are now in the palm-house 180 species and varieties of palms. The Museum of Economic Botany attached to the Garden has been enriched during the past year by 1795 articles, amongst the more remarkable of which was a collection sent by the Sultan of Johore, one of the specimens being a sample of sugar prepared from the cocoa-nut.

STUDENTS of the Caucasian languages will be glad to learn that the second volume of Baron Uslar's work, "The Ethnography of the Caucasus," has been published at Tiflis. It contains his "Tchetchen Language," and, in an appendix, several articles on the epics of the Caucasian mountaineers, on the study of the Caucasian languages and their alphabets, as also a translation of Schiefner's "Tchetchensche Studien," and a collection of Tchetchen proverbs and tales about Nasr-eddin, by J. Bartolomei.

IN connection with the discussion on "Valency" at the Bath meeting of the British Association, referred to in last week's NATURE, Prof. Meldola read a paper on the constitution of the azonaphthol compounds, in which he drew attention to the fact that the properties of these important colouring-matters could only be satisfactorily explained by admitting that they contained oxygen in the tetravalent condition.

THE vapour-densities of the chlorides of chromium have, for the first time, been determined by Profs. Nilson and Pettersson, of Stockholm. The interest attaching especially to the chromic chloride, hitherto known as Cr_2Cl_6, in view of the recent redeterminations of the densities of the corresponding chlorides of aluminium and iron, gives more than secondary importance to the work of the Swedish chemists. Readers of NATURE will remember that these recent experiments by the indefatigable workers just mentioned, and by Prof. Victor Meyer and his co-workers at Göttingen, upon the composition of the molecules of the chlorides of aluminium and iron, resulted in the conclusion that the double formulæ, Al_2Cl_6 and Fe_2Cl_6, must be abandoned in favour of the simpler formulæ, $AlCl_3$ and $FeCl_3$. This, of course, meant that our old notions as to the tetrad nature of these elements were incorrect, and that in reality they behave as triads. Profs. Nilson and Pettersson now clinch the matter by showing that chromium, which in many respects so much resembles aluminium and iron, behaves in precisely the same way. Chromic chloride was fortunately obtained in beautiful laminated crystals of almost perfect purity. The minute traces of absorbed moisture were readily eliminated by gently warming in a current of dry carbonic acid gas; when this was accomplished the requisite quantity was weighed out into a small platinum capsule in those experiments which were conducted in the platinum density apparatus, and in small pieces of ignited porous tubing when the porcelain apparatus was employed. The chloride was found to vaporize very slowly indeed at 1065° C., precluding the possibility of taking densities below that temperature; however, at this comparatively low temperature, the density was 6·135. Now $CrCl_3$ corresponds to a density of 5·478, while Cr_2Cl_6 must of necessity require a number twice as great, and hence cannot exist in the gaseous state. On increasing the temperature to 1190°, the value of 5·517 was obtained, which remained practically constant up to nearly 1300°. Over 1300° the molecules of $CrCl_3$ commence to break up into those of $CrCl_2$ and free chlorine. This is a most decisive result, and one which cannot possibly lead to any other conclusion than the adoption of the formula $CrCl_3$. It is only fair to mention that Messrs. Friedel and Crafts on carrying out vapour-density determinations of aluminium chloride by Dumas's method for 250° above its boiling-point (183°), have very recently obtained results which appear to indicate that this chloride may condense to the double molecule Al_2Cl_6 at these comparatively low temperatures. However this may be, there can be no doubt in the cases of iron and chromium that the triad formula is the only one compatible with experiment, and we shall be very glad to see the doubt in case of aluminium completely cleared up by further experiments. The determinations in the case of the lower chloride of chromium, $CrCl_2$, have been made under great experimental difficulties. This substance is the most difficultly volatilized of any yet submitted to vapour-density determinations. It required the most intense heat of the hottest procurable furnace, and even then was only very slowly converted into vapour. It was obtained perfectly pure by reduction of the chromic chloride utilized for the former experiments, by gently heating in a stream of hydrogen. At the lowest observable temperature, 1300°–1400° C., the density was found to be 7·8, considerably lower than the number required by Cr_2Cl_4. On further increasing the heat to 1600°, the density gradually diminished to 6·2, showing that at some still higher temperature one would finally attain the value 4·25 corresponding to $CrCl_2$. Hence chromous chloride again resembles ferrous chloride, the only difference being that the former is much more difficult to vaporize.

AN exceedingly useful and handy *résumé* of results in the "modern geometry of the triangle" is published in the just issued Proceedings of the Association Française pour l'Avancement des Sciences, Congrès de Toulouse, 1887. It is entitled "Premier Inventaire de la Géométrie du Triangle," by M. E. Vigarié. A second "Inventaire," which the author proposes to draw up, will be occupied with the extensions to certain (as Harmonic) quadrilaterals and polygons, and to space figures.

WE have received Part 3 of "A Catalogue of the Moths of India," compiled by E. C. Cotes, First Assistant to the Superintendent, Indian Museum, and Colonel C. Swinhoe. Of the first two parts, dealing respectively with Sphinges and Bombyces, we have already given some account (NATURE, vol. xxxvii. p. 386). The present part deals with Noctues, Pseudo-Deltoides, and Deltoides.

THE Trustees of the Australian Museum, Sydney, have issued Part I. of a catalogue of the fishes in the collection of the Museum. It relates to recent palæichthyan fishes, and has been compiled by Mr. J. Douglas Ogilby.

A REMARKABLE book on "The Butterflies of the Eastern United States and Canada, with especial reference to New England," by S. H. Scudder, of Cambridge, Mass., U.S.A., is about to be published in monthly parts. It will be completed in twelve parts, the first of which will appear in November. The preparation of this elaborate work was first announced by the author in 1869. Since that time he has had it always in hand, and during the last eight years he has devoted to it undivided attention. According to the prospectus which has been issued, Mr. Scudder has not only availed himself of the personal aid of a host of willing friends and correspondents, who have confided to him their voluminous field notes and numerous specimens, but he has carefully gleaned every fact of value from the natural history journals and other publications, and supplemented all by his thirty-five years' experience in the field. It is claimed that no systematic work on butterflies has ever appeared in any language comparable with it in the complete elaboration of a single limited fauna, in attention to every stage of life, in thorough and excellent illustration of every period of the butterfly's existence, and in careful detail of all structural features. The book will contain seventeen plates of butterflies, six of eggs, eleven of caterpillars, two of the nests of caterpillars, three of chrysalides, two of parasites, thirty-three of structural details in all stages of life, nineteen maps and groups of maps to illustrate the geographical distribution of the butterflies, and three portraits of early naturalists of America—in all, about two thousand figures on ninety-six plates, of which forty or more will be coloured. The printing of the plates was begun three years ago, and is now nearly finished.

A THIRD edition of Mr. R. Milne Murray's "Chemical Notes and Equations" (Maclachlan and Stewart, Edinburgh) has been issued. The book is intended for the use of students. In this edition a section on the electrolysis of salts has been introduced, and some additions have been made to the descriptive part of the work.

THE latest number (No. 3, vol. iii.) of the Journal of the Bombay Natural History Society contains, amongst other papers: unscientific notes on the tiger, by J. D. Inverarity; butterflies and ants, by Lionel de Nicéville; on the Lepidoptera of Karachi and its neighbourhood (part 2), by Colonel Swinhoe; notes on some bees and wasps from Burmah, by Captain C. T. Bingham; notes on the origin of the belief in the bis-cobra, by G. A. Da Gama. Mr. Da Gama says that the term bis-cobra is not of Oriental origin, but is a contraction of the Portuguese *bicho-de-cobra*. The early Portuguese settlers in India named the animals they met with from their most prominent features.

Thus, the *nag* they called, on account of its hood, *cobra-de-capello;* the *Daboia*, on account of its carpet-like skin, they called *cobra-de-alcatifa*—that is, the carpet-snake. From old Portuguese writings he believes that the mangoose is the bis-cobra; and from the crawling motion of that animal the Portuguese had an idea that the *bicho-de-cobra* was a lizard. In fact, in a work of the Jesuit father De Souza, published in 1710, though probably written twenty years earlier, the mangoose is described as "that poisonous reptile, *bicho-de-cobra.*" The name mangoose gradually usurped the place of *bicho-de-cobra*, but among the natives the idea of a poisonous lizard called bis-cobra remained, and it has been handed down with terrible stories of its poisonous powers.

THE South London Microscopical and Natural History Club has published its seventeenth Annual Report. The Report includes abstracts of some interesting papers read at the meetings. The Committee say that during the past year there was a uniformly good attendance of members.

WE have received the third number of the series "Insect Life," issued by the Entomological Division of the United States Department of Agriculture. The object of this series is to exhibit the economy and life-habits of insects, especially in their relation to agriculture. Among the contents of this number are notes on the Rocky Mountain locust; a report on injury done by "roaches" to the files in the Treasury at Washington; further notes on the hop-plant louse (*Phorodon humuli*); and a paper suggesting steps towards a revision of Chambers's index to the described Tineina of the United States and Canada, with notes and descriptions of new species, by Lord Walsingham.

SOME time ago the Colorado Ornithological Association was formed, and through the efforts of its members a comprehensive list of the birds of Colorado, numbering about 350 species and sub-species, was soon prepared. This Society has now transformed itself into an organization with wider aims, and has assumed the name of the Colorado Biological Association. The objects of the Association in its new form are the detailed investigation and recording of the fauna and flora of Colorado, recent and fossil. The Association hopes to become the highest authority on all matters connected with the biology of the State, both from the scientific and the economic points of view, and through its Secretary and referees will place itself at the service of the scientific and general public in answering all questions within the scope of its investigations, and in identifying specimens that may be submitted for this purpose.

THE general Report, by Prof. Egoroff, on the observations made in Russia and Siberia during the eclipse of the sun of August 19, 1887, under the direction of the Committee of the Russian Physical and Chemical Society, is now published (in Russian) in the Journal of the Society (vol. xx. 6). Seven stations were provided with observers and instruments (at Wilno, Nikolsk, Tver, Petrovsk, Vyatka, Krasnoyarsk, and the Bay of Possiet), but only at three of them—Petrovsk, Krasnoyarsk, and Possiet—could the eclipse be observed in detail. Fourteen excellent photographs were taken at Krasnoyarsk, and of these two are reproduced in M. Egoroff's Report, as also several drawings of the corona which were made by hand at Polotsk, Vladimir, and places in Siberia. Various observations with regard to the position of the protuberances and the shape of the corona are given in the Report, and its general conclusions are as follows:—(1) The corona is not a merely optical phenomenon: it has a real existence, and it maintained its shape not only during the whole of the eclipse at each spot where it was observed, but also at spots as far distant from one another as Polotsk and Possiet (distance, 6000 miles). (2) The corona of 1887 is a representation of those coronæ which correspond to a minimum of spots on the sun. The like were observed in 1867 and 1878. Its peculiarities are interesting in connection with the question as to the structure of the sun and its corona. Mr. Norman Lockyer, in his work on "The Chemistry of the Sun," expresses regret that he could not see, in 1886, while in Grenada, those *panaches* on the poles of the sun which he had carefully studied in 1878. The photographs of M. Hamontoff (Krasnoyarsk) prove that those currents existed, and that they were well seen on August 19, 1887. (3) There is a correlation between the distribution of the rays of the corona and the position of protuberances. (4) The brilliancy of the light of the corona is of the same order as that of the full moon (as shown by several photometric measurements, and also by the visibility of α Leonis in the rays of the corona). (5) The spectrum of the corona was an uninterrupted one, with feeble Fraunhofer lines. Bright lines were not seen, except for a moment at Petrovsk, where M. Stonaewicz saw the green bright line; the cloudiness of the sky, which resulted in a great amount of reflected light, probably prevented the bright lines from being seen. (6) Polarimetric measurements require a bright sky; under other conditions false conclusions might be arrived at. (7) Both atmospheric pressure and temperature are lowered during the eclipse, the minimum coming at a later time than the middle time of the full eclipse.

A GREAT number of meteorological observations having been made during the eclipse at various places in Russia and Siberia, Prof. Hesehus now sums them up in the same issue of the Journal of the Russian Physical and Chemical Society (xx. 6). It appears from the curves which he has drawn after having availed himself of observations made at twenty-five different stations, that the eclipse resulted in lowering the atmospheric pressure by about 0·2 mm., the minimum being reached a few minutes (about five to ten) after the time of the full eclipse. The fact is best explained by the condensation of vapour in the atmosphere. The temperature was lowered by an average of 1°·6 C. in the shade—the minimum being reached ten minutes after the full eclipse; and by about 8°·6 in the sun's rays—the minimum being attained in this case three minutes after the full phase of the eclipse. The force of the wind also was reduced, probably on account of the condensation of vapour in the atmosphere. The data as to the influence of the eclipse on the magnetic needle are contradictory. The influence of the eclipse on plants and animals was well pronounced. The *Acacia armata* folded its leaves, while the *Nicotianæ* and *Mirabilis jaloppa* opened their flowers. In the marshy spots of Siberia, such as Turinsk, the mosquitoes made their appearance, as they usually do in the evenings. The well-known facts as to the uneasiness and fear which are felt by higher animals were confirmed. On the whole, the Physical Society expected more important results when it organized meteorological observations at so many stations provided with physical instruments, but the weather was unfavourable to the work of the observers. Hilger's spectrograph for photographing the ultra-violet parts of the spectrum of the corona with the view of detecting traces of carbon and carboniferous compounds, could not be used on account of the weather.

THE same periodical contains a record of Prof. Mendelejeff's impressions during his balloon ascent at Klin. The Russian chemist saw the corona from his balloon for only twenty seconds. His view of the sun was unfortunately obstructed by a cloud.

THE Meteorological Council have published Part 5 of "Contributions to our Knowledge of the Meteorology of the Arctic Regions." The four previous parts contained principally the meteorological results furnished by the Franklin search expeditions which wintered to the eastward of longitude 120° W. between 1848–58, but also included the results available from the date of Sir W. E. Parry's expedition in 1819. Part 5 relates to the region of Behring Strait, and to the search expeditions in that direction between 1848–54. The whole series has been discussed in a uniform and most complete manner by Mr. R. Strachan, and all the available information relating to the physical phenomena, and to the movements of animals and birds, has been thoroughly exhausted. The work contains most valuable data for scientific inquiry, and for use in any future expeditions to those remote regions.

THE additions to the Zoological Society's Gardens during the past week include two Toque Monkeys (*Macacus pileatus* ♂ ♀) from Ceylon, presented by Mrs. Ellen Hodson; a Moustache Monkey (*Cercopithecus cephus* ♂) from West Africa, presented by Mr. Andrew Allen; a Common Otter (*Lutra vulgaris* ♀), British, presented by Mr. John Crisp; a Japanese Deer (*Cervus sika* ♂) from Corea, presented by Capt. H. C. Eagles, R.M.L.I.; three Virginian Opossums (*Didelphys virginiana* ♂ ♀ ♀) from North America, presented by Mr. G. F. Whateley, R.N.; a Common Chameleon (*Chamæleon vulgaris*) from North Africa, presented by Mr. George Berry; a Collared Mangabey (*Cercocebus collaris*) from West Africa, a Grey Ichneumon (*Herpestes griseus*) from India, two Cockateels (*Calopsitta novæ-hollandiæ*) from Australia, four Snow Geese (*Chen albatus*) from North America, a Larger Hill-Mynah (*Gracula intermedia*) from Northern India, deposited; four Radiated Tortoises (*Testudo radiata*) from Madagascar, purchased; an Indian Swine (*Sus cristatus*) from India, a Nilotic Trionyx (*Trionyx ægypticus*) from the River Nile, received in exchange.

OUR ASTRONOMICAL COLUMN.

THE RING NEBULA IN LYRA.—Prof. Holden reports that this object, as seen with the great Lick refractor, shows far more detail than had been detected either by Lassell with his 4-foot reflector, or by the Washington observers with the great 26-inch refractor. With these telescopes thirteen stars had been seen in an oval outside the ring, and one star had been seen within it. The 36-inch Lick telescope shows twelve stars within the ring or projected upon it, and renders it obvious that the nebula consists of a series of ovals or ellipses: first the ring of stars, then the outer and inner edges of the nebulosity, next a ring of faint stars round the edges of the inner ring, and last a number of stars situated on the various parts of the nebulosity and outer oval.

COMETS BROOKS AND FAYE.—The following ephemerides are in continuation of those given in NATURE, vol. xxxviii. p. 576:—

	Comet 1888 *c* (Brooks).		Comet 1888 *d* (Faye).	
1888.	R.A.	Decl.	R.A.	Decl.
	h. m. s.	° ′	h. m. s.	° ′
Oct. 29	16 47 54	0 14·1 S.	7 53 14	8 22·3 N.
31	16 52 12	0 59·0	7 55 34	7 58·4
Nov. 2	16 56 26	1 42·0	7 57 48	7 34·6
4	17 0 33	2 23·2	7 59 53	7 11·0
6	17 4 36	3 2·7	8 1 50	6 47·5
8	17 8 35	3 40·6	8 3 39	6 24·3
10	17 12 30	4 17·0	8 5 21	6 1·3
12	17 16 21	4 51·8 S.	8 6 55	5 38·7 N.

COMET 1888 *e* (BARNARD).—The following ephemeris for Berlin midnight is by Herr A. Berberich (*Astr. Nach.*, No. 2861):—

1888.	R.A.	Decl.	Log *r*.	Log Δ.	Brightness.
	h. m. s.	° ′			
Oct. 28	5 40 6	3 48·7 N.	0·3370	0·1498	6·0
30	5 32 12	3 17·5			
Nov. 1	5 23 39	2 44·6	0·3317	0·1214	7·1
3	5 14 24	2 9·9			
5	5 4 28	1 33·4	0·3265	0·0949	8·2
7	4 53 50	0 55·3			
9	4 42 31	0 16·0 N.	0·3214	0·0716	9·4

The brightness at discovery is taken as unity.

AMERICAN OBSERVATORIES.—Prof. W. W. Campbell has been appointed to the position in the Observatory of Ann Arbor which was held by Mr. J. M. Schaeberle previous to his appointment as assistant at the Lick Observatory.

The Observatory at Iowa College, Grinnell, Iowa, possesses a fine equatorial of 8 inches aperture by the Clarks, and strong efforts are being made to obtain a transit-instrument and chronograph, and sidereal and mean clocks, so that a time service may be maintained.

The Carleton College Observatory, Northfield, Minnesota, is now a very well equipped institution, with transit and prime vertical instruments, besides the old equatorial of 8¼ inches, and the new one of 16 inches aperture, the 30-foot dome for which is already in its place. A standard time service has been organized, and standard "Central" time—that is, time six hours later than Greenwich mean time—is distributed to nine railways, embracing in all more than 12,000 miles of road. The charge of this department has been given to Miss C. R. Willard. Dr. H. C. Wilson, late of Mount Lookout, Cincinnati, is Assistant Professor of Astronomy at Carleton College, and Prof. W. W. Payne, editor of the *Sidereal Messenger*, is Director of the Observatory.

MESSRS. FEARNLEY (the Director of the Christiania Observatory) and Geelmuyden have published zone observations of the stars between 64° 50′ and 70° 10′ north declination, made at the Observatory. The volume is a large one of 319 pages. The observations are preceded by an introduction giving an account of the work.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1888 OCTOBER 28—NOVEMBER 3.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on October 28

Sun rises, 6h. 50m.; souths, 11h. 43m. 49·0s.; sets, 16h. 38m.: right asc. on meridian, 14h. 12·8m.; decl. 13° 22′ S. Sidereal Time at Sunset, 19h. 8m.

Moon (at Last Quarter October 28, 2h.) rises, 22h. 8m.*; souths 6h. 12m.; sets, 14h. 6m.: right asc. on meridian, 8h. 40·1m.; decl. 19° 31′ N.

Planet.	Rises.	Souths.	Sets.	Right asc. and declination on meridian.	
	h. m.	h. m.	h. m.	h. m.	° ′
Mercury..	7 40	12 12	16 44	14 41·6	17 23 S.
Venus.....	9 35	13 38	17 41	16 7·7	21 48 S.
Mars......	12 6	15 47	19 28	18 17·0	24 58 S.
Jupiter....	9 49	13 57	18 5	16 26·4	21 13 S.
Saturn....	23 33*	7 0	14 27	9 28·1	15 51 N.
Uranus...	5 12	10 41	16 10	13 10·1	6 47 S.
Neptune..	17 46*	1 32	9 18	3 59·4	18 48 N.

* Indicates that the rising is that of the preceding evening.

Oct.	h.	
29	4	Saturn in conjunction with and 1° 16′ south of the Moon.
Nov.		
1	0	Mercury in inferior conjunction with the Sun.
1	21	Venus in conjunction with and 1° 31′ south of Jupiter.
3	12	Mercury in conjunction with and 4° 50′ south of the Moon.

Variable Stars.

Star.	R.A.	Decl.			
	h. m.	° ′			h. m.
U Cephei	0 52·4	81 16 N.	Oct.	31,	2 9 *m*
Algol	3 0·9	40 31 N.	,,	30,	20 29 *m*
λ Tauri	3 54·5	12 10 N.	,,	30,	4 38 *m*
			Nov.	3,	3 30 *m*
R Canis Majoris	7 14·5	16 12 S.	Oct.	31,	0 51 *m*
			Nov.	1,	4 7 *m*
U Monocerotis	7 25·5	9 33 S.	Oct.	31,	*M*
S Cancri	8 37·5	19 26 N.	,,	29,	23 42 *m*
U Ophiuchi	17 10·9	1 20 N.	Nov.	1,	18 12 *m*
β Lyræ	18 46·0	33 14 N.	,,	1,	20 0 *M*
T Vulpeculæ	20 46·7	27 50 N.	Oct.	29,	20 0 *M*
			,,	30,	21 0 *m*
Y Cygni	20 47·6	34 14 N.	,,	29,	3 0 *m*
			Nov.	1,	3 0 *m*
δ Cephei	22 25·0	57 51 N.	,,	2,	1 0 *m*

M signifies maximum; *m* minimum.

Meteor-Showers.

	R.A.	Decl.	
Near ν Arietis	43°	22° N.	Slow; brilliant.
,, 30 Tauri	56	10 N.	Slow; brilliant.
,, β Tauri	78	30 N.	Swift.